

## **AMENDMENTS TO THE SPECIFICATION:**

Please insert the following heading before the paragraph beginning on page 1, line 2:

### **Background Of The Invention**

#### **(1) Field of the Invention**

Please insert the following heading before the paragraph beginning on page 1, line 10:

#### **(2) Description of the Art**

Please insert the following heading before the paragraph beginning on page 5, line 11:

### **Summary Of The Invention**

Please insert the following heading before the paragraph beginning on page 6, line 26:

### **Description Of The Figures**

Please insert the following heading before the paragraph beginning on page 7, line 23:

### **Detailed Description Of The Invention**

Please amend the paragraph on page 15, beginning at line 25 as follows:

As before, two input signal vectors **A** and **B**, having respective amplitudes  $V_a$  and  $V_b$ , at inputs 102a and 102b are split into signal fractions  $a_1.A$ ,  $a_2.A$ ,  $a_3.A$  and  $b_1.B$ ,  $b_2.B$ ,  $b_3.B$  by splitters 106a and 106b and fed to first and second inputs 1 and 2 of first, second and third hybrids 110 to 114: i.e. signals  ~~$a[n].A$  and  $b[n].B$~~   $a[n+1].A + b[n+1].B$  are input to nth hybrid 110 + 2n,  $n = 0, 1$  and  $2$ . The splitting ratios are set so that  $a_1 = b_1$ ,  $a_2 = b_2$  and  $a_3 = b_3$  in order to implement phase to power conversion in the hybrids 110 to 114.

Please amend Table 1 on page 16, beginning at line 18 as follows:

Table 1

Hybrid	Input	Fraction		Hybrid	Input	Fraction
144 <sub>4</sub>	1	$c1.(a1.A + b1.B)$		144 <sub>7</sub>	1	$e2.(a2.A + b2.B)$
144 <sub>4</sub>	2	$d1.(a3\underline{1}.A - b3\underline{1}.B)$		144 <sub>7</sub>	2	$f2.(a2.A - b2.B)$
144 <sub>5</sub>	1	$c2.(a1.A + b1.B)$		144 <sub>8</sub>	1	$g1.(a3.A + b3.B)$
144 <sub>5</sub>	2	$d2.(a3\underline{1}.A - b3\underline{1}.B)$		144 <sub>8</sub>	2	$h1.(a\underline{4}3.A - b\underline{4}3.B)$
144 <sub>6</sub>	1	$e1.(a2.A + b2.B)$		144 <sub>9</sub>	1	$g2.(a3.A + b3.B)$
144 <sub>6</sub>	2	$f1.(a2.A - b2.B)$		144 <sub>9</sub>	2	$h2.(a\underline{4}3.A - b\underline{4}3.B)$

Please amend the paragraph on page 17, beginning at line 25 as follows:

Table 2 below shows output signals from the hybrids 144<sub>4</sub> to 144<sub>9</sub>. The splitter fractions c1 etc. are necessary scalar quantities, but terms in parenthesis in Table 2 column 4, e.g. (a1A + b1.B) and (a31.A – b31.B), are vector additions and subtractions. The phase difference is imposed between Va and Vb as described earlier with reference to Figure 3 or 4, and vectors are indicated by characters in bold type. Moreover, as previously described, resultants of vector additions (a1.A + b1.B), etc, between signals of equal magnitude are all in phase with one another, and differ in phase by 90 degrees to all vector subtractions (a31.A – b31.B) etc. The vector subtractions are therefore all automatically in quadrature with the vector additions.

Please amend the Table 2 on page 18 as follows:

Table 2

Antenna Element	Hybrid	Output	Output Signal
148U6	144 <sub>4</sub>	Sum	$c1.(a1.A + b1.B) + d1.(a3\underline{1}.A - b3\underline{1}.B)$
148U5	144 <sub>5</sub>	Sum	$c2.(a1.A + b1.B) + d2.(a3\underline{1}.A - b3\underline{1}.B)$
148U4	144 <sub>6</sub>	Sum	$e1.(a2.A + b2.B) + f1.(a1.A - b2.B)$

148U3	144 <sub>7</sub>	Sum	$e2.(a2.A + b2.B) + f2.(a2.A - b2.B)$
148U2	144 <sub>8</sub>	Sum	$g1.(a3.A + b3.B) + h1.(a3.A - b3.B)$
148U1	144 <sub>9</sub>	Sum	$g2.(a2.A + b3.B) + h2.(a3.A - b3.B)$
148L1	144 <sub>9</sub>	Diff.	$g2.(a3.A + b3.B) - h2.(a3.A - b3.B)$
148L2	144 <sub>8</sub>	Diff.	$g1.(a3.A + b3.B) - h1.(a3.A - b3.B)$
148L3	144 <sub>7</sub>	Diff.	$e2.(a2.A + b2.B) - f2.(a2.A - b2.B)$
148L4	144 <sub>6</sub>	Diff.	$e1.(a2.A + b2.B) - f1.(a2.A - b2.B)$
148L5	144 <sub>5</sub>	Diff.	$c2.(a1.A + b1.B) - d2.(a3.A - b3.B)$
148L6	144 <sub>4</sub>	Diff.	$c1.(a1.A + b1.B) - d1.(a3.A - b3.B)$

Please amend the paragraph on page 18, beginning at line 3 as follows:

The expressions in the fourth column of Table 2 are of the form  $P + Q$ , where  $Q$  is a vector in quadrature with a vector  $P$ . All  $P$  vectors are in phase with one another and all  $Q$  vectors are in phase with one another. They can therefore be written as  $P + jQ$ , where  $P$  and  $Q$  are scalar magnitudes of  $P$  and  $Q$ . E.g. for antenna element 148U6:

$$P = e2c1.(a1.A + b1.B) \text{ and } Q = d1.(a3.A - b3.B)$$

Please amend the Table 3 on page 18 as follows:

Table 3

Splitter	Splitter Output	Split Ratio	
102a	a1	0.2500 0.2286	-9.5dB -12.8dB
	a2	0.5000 0.7873	-7.20dB -2.1B
	a3	1.0000 0.5725	-1.18dB -4.8dB
102b	b1	0.2500 0.5725	-9.5dB -4.8dB
	b2	0.5000 0.7873	-7.20dB -2.1dB
	b3	1.0000 0.2286	-1.18dB -12.8dB

142c	c1	1.0000 <u>0.3011</u>	-3.00dB <u>-10.4dB</u>
	c2	1.0000 <u>0.9536</u>	-3.00dB <u>-0.4dB</u>
142d	d1	1.0000 <u>0.7286</u>	-0.97dB <u>-2.8dB</u>
	d2	0.5000 <u>0.6849</u>	-7.00dB <u>-3.3dB</u>
142e	e1	1.0000 <u>0.6112</u>	-3.00dB <u>-4.3dB</u>
	e2	1.0000 <u>0.7915</u>	-3.00dB <u>-2.0dB</u>
142f	f1	1.0000 <u>0.6112</u>	-0.97dB <u>-4.3dB</u>
	f2	0.5000 <u>0.7915</u>	-7.00dB <u>-2.0dB</u>
142g	g1	1.0000 <u>0.7286</u>	-3.00dB <u>-2.8dB</u>
	g2	1.0000 <u>0.6849</u>	-3.00dB <u>-3.3dB</u>
142h	h1	1.0000 <u>0.3011</u>	-0.97dB <u>-10.4dB</u>
	h2	0.5000 <u>0.9536</u>	-7.00dB <u>-0.4dB</u>